- 2 -

Stephenson *et al.*
Appl. No. 09/560,555

abandonment of this application, then such extensions of time are hereby petitioned

under 37 C.F.R. § 1.136(a), and any fees required therefor (including fees for net addition

of claims) are hereby authorized to be charged to our Deposit Account No. 19-0036.

RECEIVED

Amendments

MAR 2 5 2003

Technology Center 2100

In the claims:

Please substitute the following claims 1, 6, 9, 14 and 20 for the pending claims 1,

6, 9, 14 and 20:

1. (Twice Amended) A method for precise feedback data generation and updating

during compile-time optimizations, within an optimizing compiler, comprising:

(1) accessing a first intermediate representation of source code of a computer

program, wherein said first intermediate representation includes instructions

instrumented into the source code of said computer program;

(2) annotating said first intermediate representation with previously-gathered

numerical feedback data from a plurality of sample executions of said computer program;

(3) updating said numerical feedback data according to a pre-defined

propagation scheme;

(4) performing an optimization of said first intermediate representation

annotated with said numerical feedback data updated in step (3), thereby producing a

transformed intermediate representation; and

(5) repeating steps (3) and (4) at least once during the same compilation pass.

6.   (Twice Amended) A computer program product comprising a computer usable

medium having computer readable program code means embodied in said medium for

causing an application program to execute on a computer that performs precise feedback

data generation and updating during compile-time optimizations, within an optimizing

compiler, said computer readable program code means comprising:

first computer readable program code means for causing the computer to access a

first intermediate representation of source code of a computer program, wherein said first

intermediate representation includes instructions instrumented into the source code of

said computer program;

second computer readable program code means for causing the computer to

annotate said first intermediate representation with previously-gathered numerical

feedback data from a plurality of sample executions of said computer program;

third computer readable program code means for causing the computer to update

said feedback data according to a pre-defined propagation scheme;

fourth computer readable program code means for causing the computer to

perform an optimization of said first intermediate representation annotated with said

numerical feedback data updated by said third computer readable program code means,

thereby producing a transformed intermediate representation; and

fifth computer readable program code means for causing the computer to re-

execute said third and fourth computer readable program code means at least once during

the same compilation pass.

9.   (Amended) A method for compile-time optimization comprising:

(1)   accessing a first intermediate representation of source code of a computer program, wherein the first intermediate representation includes instructions instrumented into the source code;

(2)   annotating the first intermediate representation with previously-gathered global and local frequency data from a plurality of sample executions of the computer program;

(3)   updating the global and local frequency data according to a pre-defined propagation scheme;

(4)   performing an optimization of the first intermediate representation annotated with the global and local frequency data updated in step (3) to produce a transformed intermediate representation; and

(5)   repeating steps (3) and (4) at least once during the same compilation pass.

14.   (Amended) A method for compile-time optimization comprising:

(1)   accessing a first intermediate representation of souce code of a computer program, wherein the first intermediate representation includes instructions instrumented into the source code;

(2)   annotating the first intermediate representation with previously-gathered feedback data from a plurality of sample executions of the computer program;

(3)   updating the feedback data according to a pre-defined propagation scheme at multiple points during a compilation process;

- 5 -

Stephenson *et al.*
Appl. No. 09/560,555

(4)   performing an optimization of the first intermediate representation annotated with the feedback data updated in step (3) to produce a transformed intermediate representation; and

(5)   repeating steps (3) and (4) at least once during the same compilation pass.

20.   (Amended) A method for compile-time optimization comprising the steps of:

(1)   accessing a first intermediate representation of souce code of a computer program, wherein the first intermediate representation includes instructions instrumented into the source code;

(2)   annotating the first intermediate representation with previously-gathered estimated frequency data from a plurality of sample executions of the computer program;

(3)   updating the estimated frequency data according to a pre-defined propagation scheme;

(4)   performing an optimization of the first intermediate representation annotated with the estimated frequency data updated in step (3) to produce a transformed intermediate representation; and

(5)   repeating steps (3) and (4) at least once during the same compilation pass.